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THE USE OF PREFERENCE AND PERCEPTION MEASURES IN NEW PRODUCT DEVELOPMENT: AN EXPOSITION AND REVIEW*

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1. Introduction

The subject of new products is one which has received a considerable amount of attention in the marketing research and management science literature in recent years. Most of what has emerged from this upsurge of research activity can be conveniently classified under two headings: on the one hand, we have some normative decision models and on the other, a number of descriptive models and empirical studies. In order to place the work to be discussed here in perspective, it will be helpful to comment briefly on the orientation of other developments in the new product area.

In their review of what has been taking place on the normative side, Montgomery and Urban discuss new product decision making as a three stage process of search, screen, and analyze (18, chapter 7). They describe models that have been developed to deal with each of these stages. That is, one way of looking at the firm's new product problem is to say that one starts out by identifying a relatively large number of possibilities and then subjects them to a sequential evaluation procedure. At each step, less desirable alternatives are discarded and gradually the list is honed down to a very small number which finally reach the market. The models found in the Montgomery and Urban review represent attempts to formalize various of the steps in this whole process. The benefits to be realized from such models need not be belabored here. It is also true, of course, that much of the firm's "new product problem" lies "outside" these models. Paralleling the sequential decision process of search, screen, and analyze are a whole series of developmental and testing activities though which "product ideas on paper" are given a physical form and plans for marketing them are formulated. The results of this testing and developmental work represent, directly or indirectly, the inputs for models like SPRINTER and DEMON. Let us consider

for a moment the nature of the inputs required by such models. As we move from the beginning stages of the decision process, where we are dealing with product ideas, through the final stages of analysis when we have the physical product in hand, the reliance on subjective or judgmental estimates as inputs diminishes while the use(and availability) of harder data increases. Compare, for example, the use of scaling techniques to elicit management's ratings of new products' "desirability" at the screening stage with DEMON, an "analysis" model of the adaptive variety which is structured so as to utilize information from market studies of various kinds in a formal way.

In effect, what is called for at each stage of the new product decision process in one from or another---and, of course, this is true whether or not one utilizes a formal model--is an estimate or prediction of consumer response. A variety of means, such as concept and product testing, are commonly used to obtain information relevant to this matter at various stages in the development of a new product.[1] For example, at a relatively early stage lab tests may be used to gauge consumer reactions to a few versions of a product that differ from one another in some known way---like flavor or with respect to some ingredient. At later stages we have full scale market tests where the product is offered for sale with a supporting promotional program. What the use of such studies amounts to is an attempt to learn something about consumer response by a cut-and-try empiricism. Some aspect of the product or its promotion is varied or altered and consumer response noted. Hopefully, out of such studies one gets an idea of what works "best".

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[1] For an illustration of the application of these techniques, See(22).

Measurement problems as well as time and cost considerations make this less than a satisfactory final solution to the problem of dealing with the uncertainty inherent in consumer response to new products. One widely discussed measurement problem that pervades virtually all consumer research is the question of external validity. Are measures of consumer response obtained under the kind of controlled or artificial conditions that permit us to isolate study for some variation in a particular feature of a product or its marketing plan indicative of what will happen in the market place? Even test marketing (itself a costly and uncertain activity) which may yield hard sales data (generally accorded high face validity)[2] obviously can only be undertaken after the product exists and therefore necessitates that some, perhaps considerable investment be made prior to having such results available.[3]

To supplant this raw empiricism what is needed is a workable and valid methodology based on some theory--a theory of how consumers respond to new products. In particular, the kind of theory that is needed is one which would permit evaluation of consumer response to product possibilities at an early stage in their development--preferably while they are still ideas and before much sunk cost has been incurred to develop and produce the physical product. Our quest for such a theory naturally leads to examine what the behaviorally-oriented work that has been going on in the new product field has to offer.

The appearance of Everett Rogers' monumental review of the sociological literature (primarily but not exclusively) on the diffusion

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[2]For some evidence of the low predictive accuracy of test market results, see (6)

[3]For a discussion of the limitations of test marketing, see (8).

of innovations (19) provided marketing people with a structure for viewing the process that occurs whereby consumers come to accept or reject a new product and offered valuable insights into the role which the mass media and word-of-mouth communications play in that process. Tangible evidence of the impact of this viewpoint on marketing can be found in a series of published studies concerned with questions such as what factors characterize early adopters of new products and "opinion leaders" and how consumers use various kinds of information sources about new products.[4] A related step of interest has been the development of aggregate market response models for new products such as Massy's STEAM (16) and Bass' forecasting model for durable goods (3) which incorporate some of the behavioral aspects of the diffusion process into their structure. While all of this has a certain value, diffusion research, as it presently stands , doesn't offer us much help as a theory or explanation of how consumers perceive and evaluate a new product as such. The reason for this is that the innovation itself--be it a product, an idea or some other social object--has not been a variable that has received much attention in research on the diffusion of innovations. Diffusion theory does give us some idea of how information about, and acceptance of a new product spreads through a social system but it says very little about why in the sense of indicating what it is about the nature of the product itself that leads people to react favorably or unfavorably once they have learned about it [5] Recall that such was the kind of knowledge we

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[4] For a listing of some of this work, see (9) .

[5] It may be noted that in discussing the "characteristics" of innovations that affect their diffusion, Rogers draws attention to the fact that this has been a neglected area of study. He suggests that one of the reasons for this is that past research has tended to focus on the diffusion process rather than on the innovation (19,p.121). Almost all diffusion studies have dealt with a single innovation. Such designs obviously preclude the treatment of the innovation itself as a variable.

identified earlier as being useful for the new product development problem. Having found diffusion theory deficient for such purposes, we must look elsewhere. Fortunately, a direction has been suggested.

2. Theory

The approach to new product development to be discussed here was originally formulated by Volney Stefflre, a psychologist and linguist at the University of California, Irvine.[6] More recently some related work done by others[7] has appeared and several firms are known to be engaged in similar research. Stefflre purports to have developed a methodology for developing new products that will fit into markets in predetermined ways. More specifically, he claims his method is capable of yielding the following:[8]

i) estimates of the share of consumer choices that a brand which does or does not exist will receive when placed on the market.

ii) estimates of the patterns of substitution and competition among products or brands currently on the market and predictions about the patterns that will exist after the introduction of specified new products.

iii) measurements of how closely a product matches the content of its advertising.

iv) indications of the opportunities for new brands in existing markets.

v) a means for the multi-brand firm to "position" new brands so that they will be substitutes for competitors' offerings but not for the firm's existing product line.

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[6] This section borrows freely from Stefflre's writings (2,20,21).

[7] See (5,7,10).

[8] See (21, p.252).

Let us begin by looking at the theory behind this methodology which promises so much. The basic premise is quite simple and may be stated as follows:

> An individual will behave toward a new thing in a matter that is similar to the way he behaves toward other things he sees the new thing as being similar to (20, p.12).

This is hardly a very complex idea but it is a very powerful and practical one---if, as an hypothesis about human behavior, it can be shown to hold up. Here we have a statement that can be directly applied to the problem of predicting consumer reaction to a new product. Unlike many behavioral science theories and hypotheses which tend to be concerned primarily with explanation, this one seems to suggest predictions. In particular, it implies the following: for some product category presently consisting of say, three brands, A, B, and C, if we market a new brand, X, which consumers see as being similar to B, but unlike A and C, then those consumers who previously bought B will be just as likely to buy X as B. In other words, X should attain about one-half of B's previous market share (all other things being equal--i.e., price, distribution, promotion) but the entry of X will not affect the market shares of A and C. There are some additional implications of consequence to this line of reasoning. If we know <u>why</u> brands are judged similar or dissimilar--i.e.,can identify the attributes or underlying dimensions which consumers use to discriminate or differentiate among brands, then this knowledge can be used to develop descriptions of new brands which will be perceived as similar and dissimilar to existing brands in predictable ways. Furthermore, Stefflre suggests that the similarity <u>judgments</u> consumers make with reference to <u>descriptions</u> of new products permit prediction of their similarity <u>behavior</u> toward the <u>actual</u> products themselves.

The forgoing may be summarized by the following set of hypotheses derived from the basic postulate stated previously:

1. Verbal measures of consumers' similarity perceptions about pairs of items allow prediction of the similarity of their behavior toward these same pairs of items.

2. Verbal measures of similarity judgments made in response to descriptions of items allow prediction of the similarity of behavior toward the items themselves.

3. How items are perceived as similar or dissimilar, using either verbal or non-verbal measures, can vary in different situations, but as long as both measures are obtained in comparable situations, they will still correspond.

4. The number of dimensions required to represent the cognitive structure of brand perceptions will be relatively low.

The first three of the above hypotheses were suggested by Stefflre (20,p.13). The fourth is due to Klahr (10). Previous studies of problem-solving indicate that the information-processing capacity of humans is limited. Noting this, Klahr hypothesized that the cognitive structure of consumers for products could be characterized as a space of relatively low dimensionality--e.g., three or fewer dimensions. That is, although a product or brand is a complex bundle of many attributes and qualities, consumers may be expected to pay attention to only a few in evaluating them.

To exploit these propositions for the managerial purposes mentioned previously requires that a series of measurements be obtained. Stefflre has developed a set of techniques which he indicates have proven satisfactory. In 1966 he reported having used this methodology in some twelve studies conducted over a five year period that dealt with a variety of consumer products including detergents, cigarettes, whiskey, coffee, automobiles and other durables (21, p.252). By now, the list is unquestionably much longer. The most novel application he mentioned was one dealing with the Peace Corps

in Peru. Stefflre also suggests that his methodology can also be used to guide the introduction of existing products into new markets and hence is relevant to the problems of international marketing.[9] Others have been active as well. Small scale studies employing techniques akin to those proposed by Stefflre have been reported by Klahr for cigarettes (10) and by Doehlert for automobile colors (5). Green and his co-workers have been engaged in some related work and have recently authored a monograph for the Marketing Science Institute which contains an excellent review of nonmetric scaling and related techniques used in analyzing preference and similarity data(7). They also present the results of several pilot studies on the preference and similarity structures for such diverse objects as business schools, marketing journals, physicians' professional reading habits, women's panties, and computers. However, it should be noted that all of the aforementioned work has been concerned with one or another aspect of measuring and analyzing preference and similarity judgments rather than with the application of these techniques to specific new product development projects. It is toward this latter subject that the present review is oriented. In what follows, we summarize the research program Stefflre has prescribed for the complete development of a new product. Stefflre has made reasonably clear what steps his approach to this problem entails (21) but little in the way of technical detail or data have been publicly reported. The best source of such specific information known to the present author is a Harvard case which describes some of Stefflre's work for General Foods on the coffee market (17). Some materials taken from that source are used here for illustrative purposes. Passing reference to the work of others is made where it is relevant to the

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[9] This topic will not be considered here.

theoretical and methodological issues discussed in connection with the new product development problem.

3. A Methodology for New Product Development

The sequential procedure for developing a new product advocated by Stefflre is outlined below. [10]

1. Define the relevant market in terms of existing patterns of substitution and competition.

2. Determine what products and brands are seen as similar to one another, and why, through studying small samples of consumers' judgments of similarity and difference.

3. Determine patterns of brand to brand and/or product to product substitution and competition through use of large-scale purchase panel data when these are available or through large scale preference studies when panel data are not available.

4. Determine the relationships between the similarity judgment data and the brand switching or brand preference data.

5. Develop descriptions of possible new brands or products suggested by the results of Steps 2 and 3.

6. Insert each description of a potential new product into a large scale preference study to determine what share of choices it receives and from what existing brands it draws these choices.

7. Build an actual physical product which consumers perceive as matching the new product description and which the results of Step 6 indicate will be successful in terms of management objectives.

8. Use similar procedures to determine what brand name, packaging, and advertising copy "fit" the product.

9. Test market.

A more detailed discussion of each of the above stages in the process is given in subsequent sections of this paper.

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[10] Based on (21, especially pp. 267-268).

4. Defining a Market

Stefflre cautions against making a priori and/or implict assumptions about what array of products and brands constitute the market relevant to a particular problem. Patterns of substitution among brands and products are often not at all obvious. As an example, he notes that brandy competes with certain types of whiskies but not others (21, p.254). Stefflre advocated use of the "best" data available on substitution and competition to define a market--e.g., estimates of brand switching derived from consumer purchase panel data. But even that type of information may be less than satisfactory because of the assumptions made about the market in designing data collection procedures. Defining the market is an important step because the set of brands and products identified become the inputs or stimuli for the similarity measurements.

5. Similarity Measurement

Given a set of products and/or brands which one has reason to believe are substitutes for one another and therefore represent competing alternatives, the next step is to determine which ones consumers perceive as similar and why. There are a number of ways of eliciting these similarity judgments. The methods differ in two important ways. First, the measurement may be a simple dichotomous one (similar or dissimilar) or an ordinal scale of several degrees of similarity or dissimilarity (most.... least). A second difference is that the respondent may be either "forced" to make similarity judgments about all possible pairs of objects or alternatively,

he may be presented with one object and is asked to indicate which other objects on a list are similar or dissimilar to the stimulus object in such a way that he is not forced to make a judgment on all possible pairs of items. A brief description of the various measurement procedures is set forth below:

a) Dichotomous Measures:

i) Forced Paired Comparisons

Respondents are presented with all possible pairs of n objects and asked to judge whether each pair is similar or dissimilar--n (n-1)/2 judgments.

ii) Triadic Method

Respondents are presented with the objects in arrays of three at a time and asked which pair is most similar and which pair is most dissimilar.

iii) Free Paired Comparisons

This is the technique Stefflre apparently employs. The respondent's attention is first directed toward a particular brand. Then he is given a list of other brands and asked to indicate which ones he thinks are similar to the stimulus brand. The procedure is repeated changing the stimulus brand on reach round.

b) Ordinal Scale Measures

i) Sequential Dichotomous Judgments

Respondents are presented with a set of cards representing all possible pairs of objects--one card per pair. They are asked to divide the cards into two piles--one pile consisting of similar pairs of objects and another consisting of dissimilar pairs. They are then instructed to take one of the piles and further divide it into two more piles of "more" and "less" similar pairs of objects. The process is repeated until the respondents have sorted all the n (n-1)/2 pairs of objects into some predetermined number of sets, which then form a k point "most similar"--"least similar" scale.

ii) Likert-Type Similarity Scales

Respondents are asked to rate each of all possible pairs of objects on say a 7 point "most similar" to "least similar" scale.

Note that these ordinal scale measures imply forcing judgements on all pairs of objects.

Choice of a similarity measurement technique is not an insignficant problem. If the number of objects being studied is at all large, requiring that judgements be made on all possible pairs can make the interview a long, boring, and highly repetitive task. Stefflre's technique seems to have certain advantages in this regard.[11] By not forcing respondents to make judgments on all possible pairs, the length of time taken and repetitiveness may be reduced. Stefflre's procedure also does not force judgments about brands the consumer is completely unaware of. But this is a tricky matter for we are interested in the content of even vague impressions and do not wish to discourage them. It is the author's own experience that asking consumers to make very refined judgments about degrees of similarity or dissimilarity is likely to reduce the reliability of the measures obtained and increased the instance of intransitivities or inconsistent judgments. Studies need to be made of the test-retest reliabilities of these different measures.

Let us now consider how these similarity measures are analyzed. For the dichotomous measures, each respondent's judgments are scored "1" or "0" (1=similar, 0=dissimilar) and a matrix of similarity scores is obtained by aggregating over consumers. The rows and columns of the matrix are formed by the brands and the main diagonal is empty. When ordinal scale measures are used, the similarity scores entered in the matrix are averages for the total sample or perhaps, some sub-group. Stefflre uses an "index of similarity" which is a ratio of the actual similarity scores to

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[11] For a sample questionnaire, see Appendix II of (17).

an expected value. Because respodents do not necessarily make similarity judgments on all possible pairs of brands, brands will differ in the number of times they are judged similar to other brands. Presumably, the better-known brands (e.g., relatively large market share and heavily advertised) will receive more mentions than those less well-known. To adjust for this, he calculates an expected value in a manner similar to that used in determining a chi square value--for each cell in the matrix, the corresponding row and column totals are multiplied together and divided by the corner value (sum of all row and column totals). This value represents the number of times one would expect two brands to be judged similar on a chance basis, given the total number of times each was judged similar to all brands considered. Hence, when the value of the index is 1, the actual extent of judged similarity is just equal to that which would be expected by "chance" as defined above.

6. Multidimensional Scaling

Much can be learned from an inspection of a matrix of similarity scores. A sample matrix from the coffee study mentioned earlier is reproduced in Table 1 (attached). The larger the value of the cell entry the more similar brands have been judged. In order to get a picture of how all brands are "positioned" relative to one another in the minds of consumers the similarity matrix is analyzed by multidimensional scaling procedures. The basic idea is that we may conceive of consumers perceptions of different brands as a space of some unknown number of dimensions in which brands are positioned. The distances between brands reflect their degree of similarity: the more similar two brands are judged to be the closer together they will be in this perceptual space. Multidimensional scaling techniques utilize similarity data to construct a map of this space.

The problem of multidimensional scaling is that of representing objects geometrically by n points so that their interpoint distances in some sense correspond to the dissimilarities of the n objects. The techniques used by Stefflre is that due to Kruskal (13,14). Kruskal views multidimensional scaling as a problem of statistical fitting--the similarities or dissimilarities are given and the task is to find the configuration whose distances fit them "best". To accomplish this, he assumes that distances and dissimilarities are monotonically related. The dissimiliarities need only be ordinal or rank-order measures. Kruskal has developed a program which computes that configuration of points (objects) which optimizes goodness of fit for a monotonic relationship between the similarity measures and the interpoint distances. "Goodness of fit" is evaluated by a quantity called "stress" that is analogous to a "residual sum of squares" or proportion of unexplained variance. The smaller the stress, the better the fit. What the program does, for a space of a given number of dimensions, is find that configuration of points which has minimum stress. The stress would be "0" for a perfect relationship ---- i.e.,perfect monotone relationship between dissimiliarities and distances. The program starts with an arbitrary configuration of points and proceeds iteratively to find the best (minimum stress) configuration in one dimension, then two, and so on up to n-1 dimensions (where n is the number of objects)--it is always possible to get a perfect fit of n objects in n-1 dimensions. The lower the dimensionality the more constrained the solution is and hence we are more apt to get poor fits in a small number of dimensions than with a larger number. At each stage the program prints out the minimum stress achieved and the (arbitrary) coordinates of the points and their interpoint distances. The coordinates can

be used to plot brand positioning "maps". Choice of which configuration is the most appropriate representation of the data is a matter of judgment. A simple way of explaining what multidimensional scaling does is to consider a problem wherein one was given a set of cities and the task was to construct a map where the only information available was the distances between the cities. Exhibit I (attached) shows a three dimensional map for the coffee similarity data shown in Table I.

Note that the location of the axes are purely arbitrary. Identification of what the dimensions mean is a matter of interpretation and data on the reasons consumers give for their similarity judgements might be useful for this purpose.[12] Such data might be quantified in various ways[13] and statistical procedures used to try to "explain" the dimensions of this perceptual map. In line with Klahr's hypothesis, it appears from the studies available that a relatively few dimensions (2-5) is sufficient to obtain good fits of similarity perceptions for consumer products.

A word of caution is in order concerning the evaluation of the goodness of fit obtained from these multidimensional scaling results. Little is known about the statistical properties of these procedures. That is, no sampling theory has been developed which allows one to make infereces about the likelihood of obtaining a particular result. Klahr has done a most valuable study that bears on this point (11). He applied Kruskal's scaling technique to similarity matrices generated from random numbers and observed "the relative frequency with which apparent structure was erroneously found in instructured data." He reports that "For a small number of points

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[12] See (17, Appendix II) for some examples of verbatum responses obtained with reference to coffee. In that study, two-thirds of all reasons consumers gave for similarity judgements dealt with flavor.

[13] See (7,17) for some suggested procedures.

(i.e., six or seven) it is very likely that a good fit will be obtained in two or more dimensions when in fact the data are generated by a random process" (11, p.1). He also presents some estimates which can be used as a rough standard against which the statistical significance of results obtained in a particular study can be evaluated.

7. The Relationship Between Similarity Perceptions and Brand Switching

Stefflre makes use of very small samples (50-100) to obtain his similarity data. The explanation that he gives for being able to do is that "there appears to be a surprising amount of homogeneity in a population of people about what is similar to what, and much less homogeneity about what is good" (21, p.256). Homogeneity of similarity judgments could be evaluated in a number of ways. For dichotomous measures, one might look at the percentage of a sample who make identical similarity assessments. If similarity scales were employed then the size of the standard deviations (across respondents) could be inspected. A more complex approach would be to calculate a measure of agreement between pairs of subjects (across objects) or to compare perceptual maps of individuals or groups clustered according to the homogeneity of their similarity judgements. In their pilot studies Klahr (10), Dochlert (5), and Green et al. (7) have all used varations of this latter technique and report some homogeneity among subjects. Stefflre does not mention use of any of these approaches. It seems that the amount of hetereogeneity one observes depends partly upon the type of similarity measures used. As mentioned earlier, dichotomous measures may be more reliable than scaling measures.

To establish the validity of these similarity measures and justify the use of small samples to obtain them, Stefflre has correlated his index of similarity based on verbal responses with a similarity index calculated from brand switching matrixes derived from consumer panel data.[14] Brand switching represents a behavioral measure of similarity--consumers will be more likely to switch among brands they regard as similar than among those they view as different. Stefflre reports that the verbal measures of similarity obtained from small samples of consumers have been found to correlate with measures derived from consumer panel data (based on much larger samples) from .50 to .80 in some 12 different studies (21, p. 255). In the coffee example, correlations of .45, .64, .69, and .73 are shown for four different cities (17, p. 31). Stefflre also notes that the correlations between judged brand similarity and brand switching are about as high as those between switching measures obtained during different time periods.

It is also worth mentioning that Doehlert reports correlation in the .9's between individual's similarity judgements and their preferences with respect to automobile colors (5). However, Klahr found a relatively weak relationship between similarity and preference for cigarettes (10).

Stefflre points out that in addition to "psychological" similarity between brands, what accounts for the patterns of substitution observed in brand switching data are overlap in availability and overlap in the audiences of media in which competing brands are advertised (21, p. 256). Overlap in availability and advertising increase competition. Stefflre's suggestion that there will be more brand switching among brands advertised in the same media than among those advertised in different ones is intriguing and,

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[14] See (17) for an example.

in principle, appears to be testable.

If a strong relationship between psychological similarity and brand switching could be assumed to hold generally, it would mean that patterns of brand substitution could be determined in situations where panel data are not available. As well, the cost of estimating market structures from small samples of similarity judgments is likely to be less than the expense involved in securing panel data. Here again, the question of the homogeneity of similarity perceptions is involved. While the correlations Stefflre reports between aggregate measures of similarity and brand switching are encouraging, one would like to see this relationship demonstrated within the same sample.

From this first round of small sample studies two types of data are obtained: measures of how similar consumers judge existing brands to be and their explanations of why. With the assistance of multi-dimensional scaling techniques we are able to develop a picture of how brands currently being sold are positioned relative to one another in the minds of consumers. The qualitative data are used to identify what product features and attributes consumers utilize in making these similarity discriminations and what combination of product features or attributes accounts for each existing brand being positioned as it is in the similarity structure. One goal here may be to identify opportunities for new products that could be developed by combining salient product attributes in some way that would be unique in terms of existing brands but appealing to a substantial proportion of consumers. Alternatively, one might be interested in assessing the potential of some alternative new product ideas identified by other means. That is, similarity information may be helpful at either the "search" or

"screen" stages of the new product decision process.

The use of similarity data for either of these two purposes depends a great deal upon the skill and judgment of the investigator. There are certain kinds of formal analysis that can be helpful. For example, if one has similarity and preference measurements for the same people, multidimensional scaling can be used to locate both existing brands and the "ideal" brand for different individuals or groups.[15] In the Stefflre methodology, what comes out of this and other more informal analyses is a set of descriptions of possible new brands. Developing these descriptions in language that will be meaningful to the consumer is obviously no simple task. The talents and knowledge of a linguist would be very useful here.

8. Measuring Preferences for New Product Descriptions

Given a set of descriptions of potential new brands, the next step is to estimate what share of consumers' choices each would receive and for which existing brands the new ones would be substitutes. Stefflre stresses the importance of not using aggregate paired comparison data or average ratings of just the new product alternatives (21, p. 260). Using only information about which of a set of new product alternatives receives the largest number of choices or highest average rating can lead to what Kuehn and Day call the "majority fallacy --.....assuming that every product must be acceptable to a majority of all consumers if it is to be successful" (15,p. 104). Instead, what one needs to know is what share of choices a new item would receive if inserted into the array of existing brands. In addition, estimates are needed of where these choices will be drawn from in terms of existing

[15] See Green et al. (7) for a discussion of these techniques and some examples.

brands. This latter information is especially important for the case of a manufacturer who already has a brand on the market and is considering adding another. Clearly, he would like to position a new brand so that it does not compete directly with his present brand but rather steals sales from competitors.

To obtain this information a large scale preference study is conducted in which the descriptions of new items are presented to respondents one at a time along with the names of existing brands and they are asked to indicate their preferences.[16] From such a study carried out with a large sample (in the order of 1500 respondents) estimstes are obtained of what market share each new product description would secure (if only it were placed on the market) and how the market shares of existing would affected by its entry. Such estimates allow management to select a new product alternative which will fit into the market in a predictable way which meets their goals with respect to market share and patterns of competition--assuming, of course, that a new product can be produced which fits the description and that people will behave toward the actual product the same way they indicated they would when responding to the description in the preference interview.

One means of partially checking such predictions of future brand switching patterns is to conduct another similarity study using a new product description and existing brand names. The similarity judgments should correlate with the preference measurements--again assuming the basic theory is correct. A practical matter that deserves mention is cost. Stefflre states that the small scale similarity studies (n=50-100) and a large scale preference study (n=1500) plus the analysis of these data can be done for about $25,000 (21, p.261).

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[16] For the details of the procedure, See (17)

9. Development of the Product and Supporting Promotion

The same basic techniques are used to develop the physical product, package, brand name, and advertising copy that will fit the new product description. Working with technical personnel, the researcher attempts to have a product "built" which fits the desired description. Consumer testing becomes a matter of presenting respondents with the actual product and asking them to describe it. The objective here is to develop a product which elicits the desired description from consumers. Next, the actual product is subjected to another preference or quasi-purchase test to see if the product performs as did the description it was built to match. Again data are obtained which are used to estimate the new product's expected market share and how existing brands would be affected by its entry into the market. Unsatisfactory performance at any stage leads to a recycling of previous activities. Essentially the same procedures are used to select a name, package design, and advertising messages that match the physical product. When all of this is completed the product is test marketed as a final check to assure that performance and goals coincide.

Stefflre's views about the role of advertising are worth repeating because they are unusually explicit and are relevant to established as well as new products.[17] He reports having encountered instances where there were marked discrepancies between what advertising said about a brand and how consumers described it and where, as a result, one brand's advertising seemingly helped another brand's sales. More specifically, he suggests that for products where repeat purchases are important advertising should function

[17] See (2) for a more detailed discussion of the application of Stefflre's methodology to advertising. His views bear some ressemblance to certain other discussions of how advertising operates as an influence process. See (1,4,12).

so as:

1. to bring into greater salience the attribute dimensions along which the brand occupies a favorable position, or

2. to state as euphemistically as possible the features the brand is seen as having that are, in general, undesirable but that the product is seen unavoidably as having,

3. to attempt to move the product along those dimensions where advertising is sufficient to position the product in an advantageous position, and

4. to 'fit' the product enough so that the product does not, in the consumers' eyes, contradict its advertising and play havoc with repurchase rates (21, p. 262).

10. Conclusion

This paper has attempted to summarize and briefly assess a relatively systematic methodology that has been propsed for guiding the development and testing of new products. The approach is based upon a simple yet powerful theory of how people respond to new objects and consists of a series of well-defined steps. Successful applications have reportedly already been realized but details have yet to be made public. The approach appears practical as well as theoretically appealing. However, much remains to be learned about its validitiy and application. If the basic theory proposed by Stefflre is found to be a tenable one, then an important task for future research will be to link it to existing knowledge about the diffusion process. An integrated theory that dealt with not only the question of how buyers respond to a new product but also with the matter of how various influence processes (especially those related to marketing variables such as availability and promotion) operate so as to effect acceptance would be of great value in attempting to deal with the problems of marketing new products.

Table 1

Index Numbers of Judged Similarity Between Brands

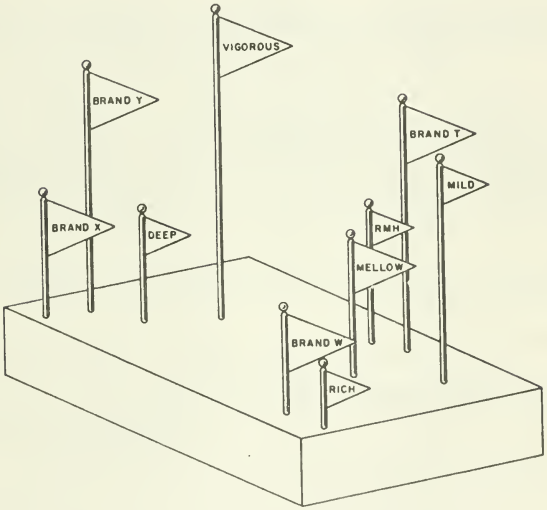
	Maxwell House	Brand T	Brand W	Brand Y	Brand X	Brand J	Brand R
Maxwell House							
Brand T	5.17						
Brand W	0	0					
Brand Y	0	0.60	0				
Brand X	1.63	2.27	0	3.78			
Brand J	2.04	1.49	0	1.36	2.96		
Brand R	3.15	1.06	6.25	0.77	1.45	0	
"Ideal" coffee	0.27	0	0	8.45	2.90	0.43	0.75

Source: "Maxwell House Division (A), "Harvard Business School Case M 266, p.9.

EXHIBIT I

MAXWELL HOUSE DIVISION (A)

TINKER-TOY MODEL OF STRUCTURE OF THE COFFEE MARKET



Source: "Maxwell House Divison (A)," Harvard Business School Case M 266 , p.15.

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